INVESTMENTS
& WEALTH MONITOR

A reprinted article from November/December 2018

Frontier Markets: A Comparative Analysis

By Cliff Quisenberry, CFA®

Frontier Markets: A Comparative Analysis

By Cliff Quisenberry, CFA®

Emerging-market investing has grown substantially in the past two decades, but investors have yet to widely adopt its smaller counterpart, frontier-market investing. Yet frontier markets share many positive attributes that have attracted long-term investors to emerging markets such as fast-growing economies, relatively cheaper valuations, and a source of diversification to U.S. equity investments. However, frontier markets also exhibit unique characteristics and challenges that set them apart. For investors who have made the decision to invest in emerging markets as an asset class, understanding the similarities and differences, and the pros and cons, can help them decide what role, if any, frontier markets should play in their investment decision-making and allocation.

One of the difficulties in discussing frontier markets is that there is limited consensus among index providers and investors about what does and does not constitute a "frontier market" versus an "emerging market." When "emerging markets" as a term was first coined by the International Finance Corporation (IFC) in 1981,[1] they were defined as those countries that fell within the World Bank's "middle-income" and "low-income" categories based on gross national income (GNI) per capita. However, when the IFC introduced its frontier equity indexes in 1996, it became apparent that such a simplistic definition could not capture countries such as Qatar and United Arab Emirates (UAE) that had GNI per capita measures greater than the United States but were considered frontier by most index providers until fairly recently.[2] Instead, the main frontier index providers MSCI, FTSE Russell, and S&P Dow Jones[3] (formerly S&P/IFC) have various methods to define whether a country is a frontier, emerging, or developed market based upon criteria including foreign investor access, size and liquidity of the market, custody, and the results of consultations with institutional investors.

For the purpose of this article, a frontier market is defined as any country covered by the three index providers that is not defined as either developed or emerging by two of the three (see table 1).[4] For example, only one index provider, FTSE, includes Kuwait as an emerging market at this time, so it remains a frontier. Korea, on the other hand, is considered by two of the index providers as a developed market and so it is defined as such, and not emerging as defined by MSCI. This methodology provides 39 frontiers, 24 emerging, and 25 developed countries as a reasonable set for comparison. However, there exist many more frontier countries with their own stock exchanges than the 39 defined as frontier here, from Armenia and Bhutan to Papua New Guinea and Uruguay, to name a few. The CIA Factbook lists 120 stock exchanges in the world,[5] but even this is not a complete list. Including exchanges simply not covered by the CIA, and adding countries that are members of regional stock exchanges but do not have one of their own,[6] the number of countries with access to a stock exchange exceeds 150, of which more than half would be considered frontier.

One driver of investor interest in emerging-market equities has been the prospect of capturing the growth of these markets' underlying economies. In that regard, the average frontier country shares similar growth prospects as its larger emerging-market counterpart, and both beat the developed markets by a good margin (see figure 1).[7] In fact, of the top 20 fastest-growing economies in the world, 16 would fall within a broad definition of a frontier country, of which 12 have a functioning stock exchange or access to a regional one.[8] Of the remainder, three are emerging markets (India, Philippines, and China) and one is Brunei Darussalam, a wealthy and developed country.[9] Each of these 20 is projected to grow real gross domestic product (GDP) at the rate of at least 6 percent annually for the next five years.

Investors may be attracted to investing in fast-growing economies, but there is a general lack of evidence from academic research or empirical studies to support the relationship of a country's aggregate stock market performance to its GDP growth. However, an argument can be made, at the very least, that faster-growing economies provide a richer opportunity set for selective investors to find companies with earnings that do directly benefit from faster economic development. A case in point are

Table 1

COUNTRY CATEGORIZATION BY THE MAJOR INDEX PROVIDERS

Frontier (39)				Emerging (24)				Developed (25)			
	FTSE	MSCI	S&P DJI		FTSE	MSCI	S&P DJI		FTSE	MSCI	S&P DJI
Argentina[a]	✓	✓	✓	Brazil	✓	✓	✓	Australia	✓	✓	✓
Bahrain	✓	✓	✓	Chile	✓	✓	✓	Austria	✓	✓	✓
Bangladesh	✓	✓	✓	China	✓	✓	✓	Belgium[b]	✓	✓	✓
Botswana[f]	✓	✓	✓	Colombia	✓	✓	✓	Canada	✓	✓	✓
Bulgaria[f]	✓	✓	✓	Czech Republic	✓	✓	✓	Denmark	✓	✓	✓
Burkina Faso[c]	✓			Egypt	✓	✓	✓	Finland	✓	✓	✓
Cote d'Ivoire[c]	✓	✓	✓	Greece	✓	✓	✓	France	✓	✓	✓
Croatia	✓	✓	✓	Hungary	✓	✓	✓	Germany	✓	✓	✓
Cyprus	✓		✓	India	✓	✓	✓	Hong Kong	✓	✓	✓
Ecuador			✓	Indonesia	✓	✓	✓	Ireland	✓	✓	✓
Estonia	✓	✓	✓	Malaysia	✓	✓	✓	Israel	✓	✓	✓
Ghana[f]	✓	✓	✓	Mexico	✓	✓	✓	Italy	✓	✓	✓
Jamaica[f]		✓	✓	Pakistan	✓	✓	✓	Japan	✓	✓	✓
Jordan	✓	✓	✓	Peru	✓	✓	✓	Korea	✓		✓
Kazakhstan	✓	✓	✓	Philippines	✓	✓	✓	Luxembourg[b]	✓	✓	✓
Kenya	✓	✓	✓	Poland[d]	✓	✓	✓	Netherlands	✓	✓	✓
Kuwait		✓	✓	Qatar	✓	✓	✓	New Zealand	✓	✓	✓
Latvia	✓		✓	Russia	✓	✓	✓	Norway	✓	✓	✓
Lebanon		✓	✓	Saudi Arabia[e]	✓	✓	✓	Portugal	✓	✓	✓
Lithuania	✓	✓	✓	South Africa	✓	✓	✓	Singapore	✓	✓	✓
Macedonia	✓			Taiwan	✓	✓	✓	Spain	✓	✓	✓
Malta	✓			Thailand	✓	✓	✓	Sweden	✓	✓	✓
Mauritius	✓	✓	✓	Turkey	✓	✓	✓	Switzerland	✓	✓	✓
Morocco	✓	✓	✓	U.A.E.	✓	✓	✓	United Kingdom	✓	✓	✓
Namibia			✓					United States	✓	✓	✓
Nigeria	✓	✓	✓								
Oman	✓	✓	✓								
Palestine[f]	✓	✓									
Panama[f]		✓	✓								
Romania	✓	✓	✓								
Senegal[c]	✓	✓									
Serbia	✓	✓									
Slovakia	✓		✓								
Slovenia	✓	✓	✓								
Sri Lanka	✓	✓	✓								
Trinidad[f]		✓	✓								
Tunisia	✓	✓	✓								
Vietnam	✓	✓	✓								
Zambia			✓								

✓ Denotes that country is covered by that index provider as a stand-alone index

a. MSCI currently includes Argentina as a Frontier but will upgrade to Emerging effective June 2019.

b. FTSE combines Belgium and Luxembourg.

c. Cote d'Ivoire is home of the regional exchange Bourse Régionale des Valeurs Mobilières (BRVM) that includes stocks from Burkina Faso, Benin, Guinea-Bissau, Mali, Niger, Senegal, and Togo. Both MSCI and FTSE include a company domiciled in Senegal as an index constituent, FTSE includes another from Burkina Faso. Both list them under Cote d'Ivoire/Ivory Coast.

d. Poland was upgraded to Developed status by FTSE in September 2018 but remains defined as an Emerging market by both MSCI and S&P Dow.

e. Saudi Arabia, designated a "stand-alone" market by MSCI, S&P Dow Jones, and FTSE, is included as Emerging because all three index providers have announced its upgrade to Emerging effective in 2019.

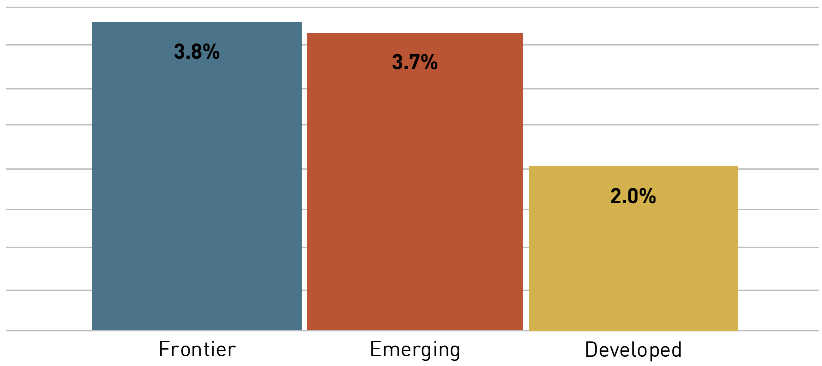
f. MSCI covers these markets in their "stand-alone" indexes.

Source: S&P DJI denotes S&P Dow Jones Indexes' S&P Frontier BMI, S&P Emerging BMI, and S&P Developed BMI indexes. FTSE denotes FTSE Russell's FTSE Frontier Index, FTSE Emerging Index, and FTSE Developed Index. MSCI denotes the MSCI Frontier Market Index, MSCI Emerging Markets Index, and MSCI World Index.

consumer-facing companies operating in countries where economic growth can mean increasingly wealthier consumers, a burgeoning middle class, and higher earnings growth for these companies. Faster economic growth, shared broadly by a country's population, should improve GDP per capita and increase the spending power of the consumers in that country. When comparing the average frontier economy to the average emerging-market economy over time, frontiers are outpacing their larger counterparts on this measure (see figure 2). This makes sense because many of the frontier countries are starting from a much lower base of development. The path of development, and its potential translation into investment opportunity, is in essence what investors in frontier and emerging markets are attempting to

Figure 1

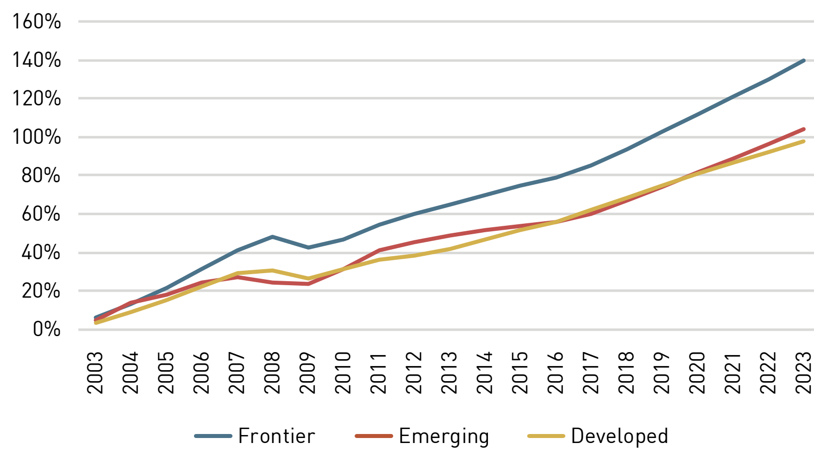
FIVE-YEAR FORECASTED ANNUAL REAL GDP GROWTH, 2019–2023



Source: World Economic Outlook Database April 2018, http://www.imf.org/external/pubs/ft/weo/2018/01/weodata/index.aspx. Average country compounded annualized growth rates within respective Frontier, Emerging, and Developed groups.

Figure 2

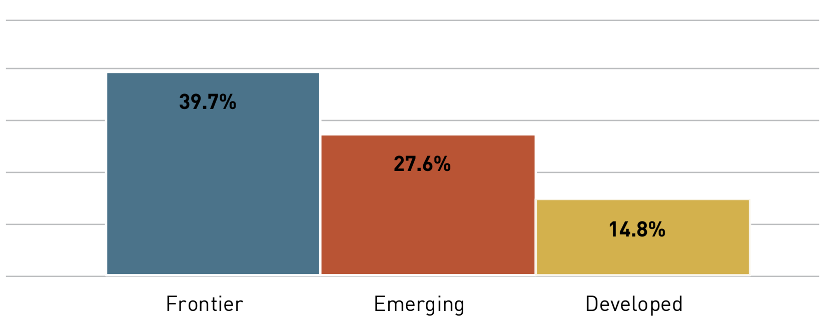
CUMULATIVE GROWTH OF COUNTRY GDP PER CAPITA



Source: World Economic Outlook Database April 2018, http://www.imf.org/external/pubs/ft/weo/2018/01/weodata/index.aspx. Base period is 2003. Cumulative percentage growth in average country GDP per capita within respective Frontier, Emerging, and Developed groups.

Figure 3

PROJECTED URBAN POPULATION GROWTH, 2020–2030



Source: Average Annual Rate of Change of the Urban Population by Country, 2020–2030, United Nations, Department of Economic and Social Affairs, Population Division (2018). World Urbanization Prospects: The 2018 Revision, Online Edition, https://population.un.org/wup/Download/Files/WUP2018-F06-Urban_Growth_Rate.xls. Average country compounded annualized growth rates within respective Frontier, Emerging, and Developed groups.

capture from these developing economies. One measure of development is a country's urbanization, or percentage of the population that lives within an urban area. As the urban population grows, there are benefits that can support growth of GDP per capita. For example, as a population shifts from the informal sectors of the economy to the formal, such as from small-scale farming toward manufacturing jobs in the cities, higher and more stable household incomes are likely to result. This, in turn, can increase demand for housing, services, and consumer goods that create further economic value. Indeed, frontier countries are forecasted to have a high rate of growth in their urban populations in the next decade (see figure 3).

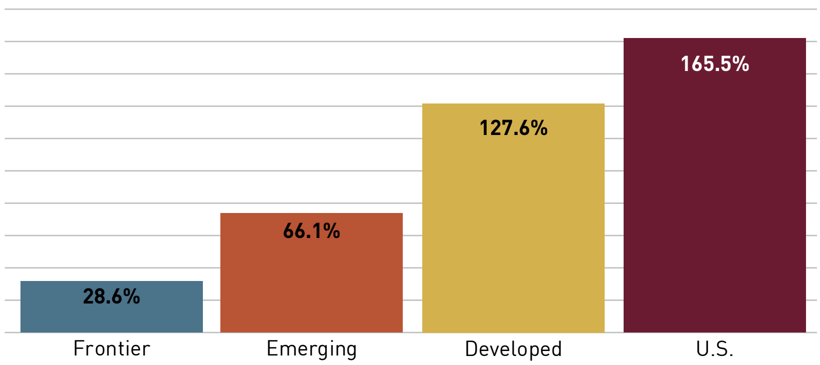
One challenge to the linkage between a country's stock market performance and its underlying economic growth is related to the similar question of whether a growth stock is a good investment. The answer depends on whether the market already has priced that growth into its valuation. Valuing a country is different than valuing a stock using a price-to-earnings (P/E) ratio, but a country's ratio of total market capitalization to its GDP, known as the "Buffett ratio," provides a similar measure on a macro level. The average Buffett ratio of the frontiers is substantially lower than those of the emerging and developed markets (see figure 4). Low Buffett ratios can indicate early stages or low levels of equity-market development, but they also can signal relative value. This is particularly true of frontier markets where there may be few listed companies. In addition, comparing the MSCI index level P/E ratios shows that frontier and emerging markets look relatively less expensive than developed markets (see figure 5). This is just one point in time, but this typically has been the case for the frontiers.

Another rationale for investing in frontier and emerging markets is to provide diversification of investment returns. In this case, frontiers lead emerging markets as a source of diversification for U.S. investors. Over the five years ending June 2018, the MSCI Frontier Market Index had a correlation coefficient of 0.43 to the S&P 500 based on monthly returns versus the MSCI Emerging Markets Index correlation coefficient of 0.63 to the S&P 500 for the same period. A comparison of rolling correlations of the key MSCI global indexes to the S&P 500 shows that frontiers have consistently had a lower correlation coefficient to the U.S. market compared to the emerging and developed markets (see figure 6). It is true that correlations of these global indexes generally have declined as a group as the impact of the global financial crisis has receded. Part of this is explained by the fact that the global financial crisis caused markets to both dramatically drop and then rebound relatively in tandem in the period from roughly June 2008 through June 2011, causing a temporary rise in correlations.[10] The other part of the explanation is that from about June 2011 until very recently, the U.S. stock market rallied strongly, leaving most international equity indexes far behind and lowering their correlations to the S&P 500. However, even when comparing frontiers to the emerging markets, frontiers demonstrate similar correlations to emerging markets as they have exhibited to the S&P 500 for most of the time period (see figure 7). This implies that frontiers truly are relatively independent compared to their larger counterparts, whether they are U.S. stocks, developed international, or even emerging markets.

In general, frontier-market economies tend to be less integrated with the global economy than emerging-market economies and relatively more affected by country-specific factors such as political crises, natural disasters, debt problems, and currency risk. In addition, because they are not widely held in the portfolios of large foreign institutional investors and do not have billions of dollars in exchange-traded fund (ETF) assets tracking them, frontiers tend to be more

Figure 4

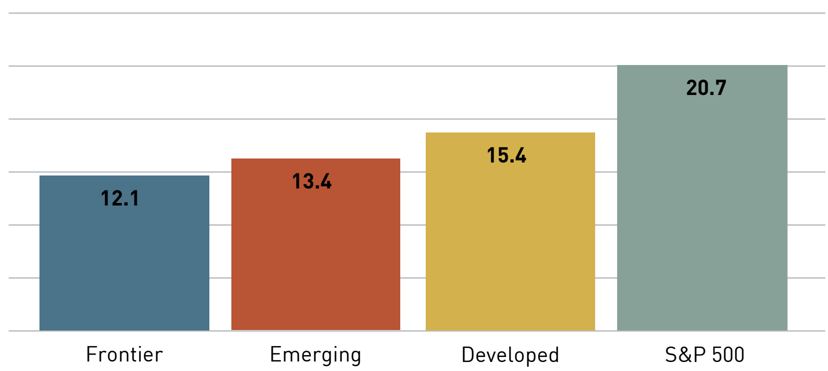
BUFFETT RATIO: MARKET CAP TO GDP



Source: World Economic Outlook Database April 2018, http://www.imf.org/external/pubs/ft/weo/2018/01/weodata/index.aspx. Average country market capitalization to GDP ratio within respective Frontier, Emerging, and Developed groups and the U.S. market capitalization as of June 30, 2018, calculated using Bloomberg company-level market capitalization of 40,334 stocks with minimal trading volume. GDP data are 2017 U.S. dollar GDP from the International Monetary Fund.

Figure 5

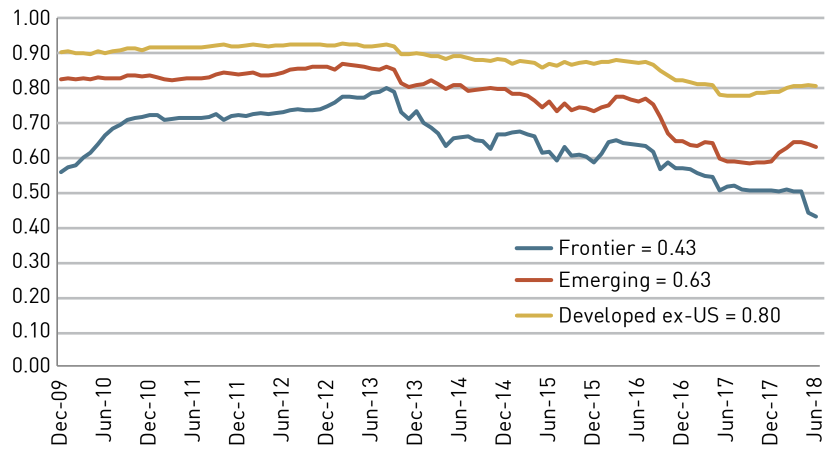
TRAILING P/E



Source: Bloomberg calculated trailing P/E ratios as of June 30, 2018, using constituents of the MSCI Frontier Markets Index, MSCI Emerging Markets Index, MSCI EAFE Index, and S&P 500.

Figure 6

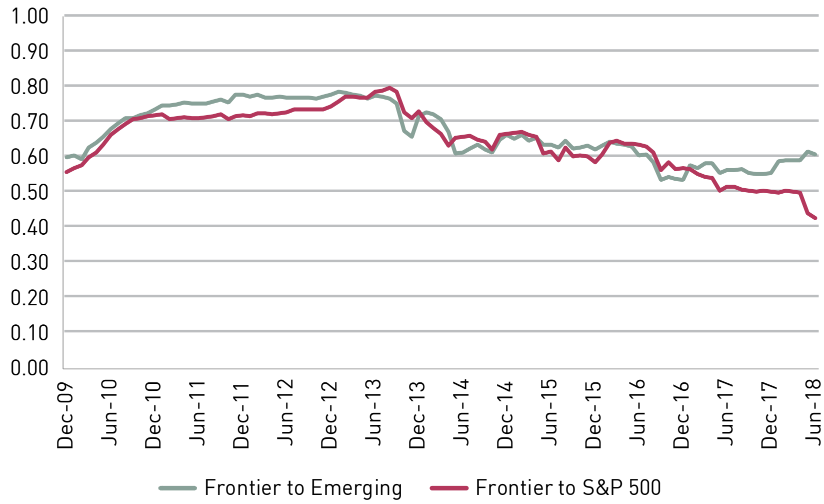
CORRELATION TO THE S&P 500



Source: Monthly Net Total returns in USD for the MSCI Frontier Markets Index, MSCI Emerging Markets Index, and MSCI World ex-US Index. Correlation calculated monthly on a 60-month rolling basis from July 2004 to June 2018 versus the S&P 500 Total Return Index.

Figure 7

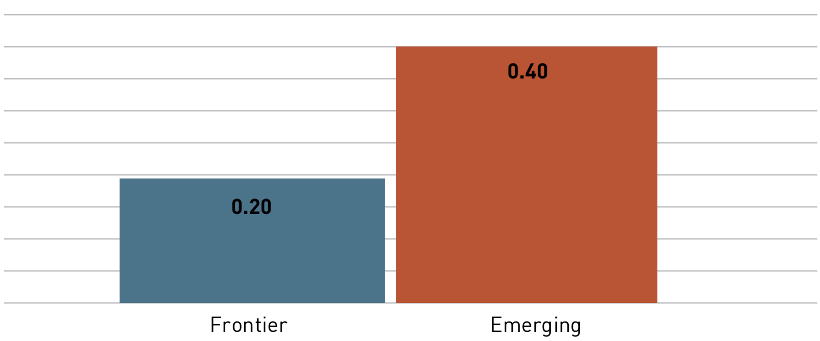
CORRELATION OF FRONTIER TO EMERGING MARKETS



Source: Correlation calculated monthly on a 60-month rolling basis from July 2004 to June 2018 of using monthly Net Total returns in USD for the MSCI Frontier Markets Index versus the S&P 500 Total Return Index.

Figure 8

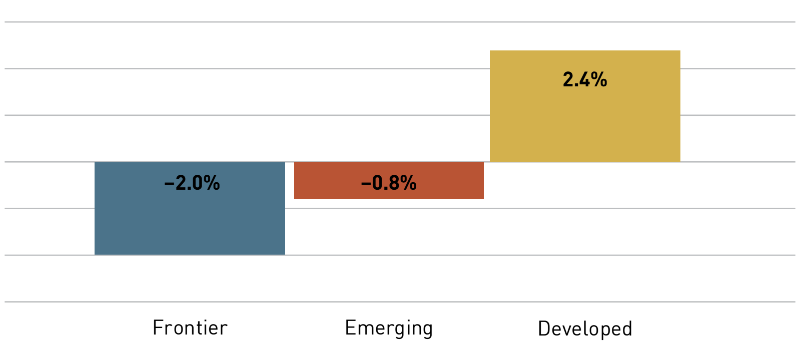
AVERAGE CROSS CORRELATION AMONG COUNTRIES



Source: Average within respective group of the pairwise correlations of monthly returns in USD of the MSCI Net Total Return country indexes from July 2013 through June 2018.

Figure 9

CURRENT ACCOUNT AS A PERCENT OF GDP



Source: Average of country current account as a percent of GDP within their respective groups, 2018 using forecasts from Fitch Solutions.

insulated from the vagaries of fund flows moving in and out. To put this in perspective, consider the following: The two largest ETFs tracking emerging markets, Vanguard's VWO and iShares' EEM, have combined assets of more than $90 billion; the two largest ETFs tracking frontier markets, iShares FM and Invesco's FRN, have combined assets of less than $600 million.[11] These are just some of the differences that can explain why frontiers do and should behave more independently. In fact, this is apparent even when comparing frontier markets to themselves. When looking at the pairwise correlations, or cross correlations, of individual frontier-country indexes to each other, a simple average of these correlations is about half of that of the emerging markets (see figure 8). In other words, frontiers are on average about half as correlated to each other as the average emerging-market country is correlated to its peers.

Frontiers may not be as exposed to the same factors as emerging or developed markets—none of the frontiers have yet to have specific trade tariffs imposed on them—but the same factors that make them behave more independently also contribute to their unique risks. For example, concerns about Argentina's current account balance and external debt caused the Argentine peso to decline 55 percent year-to-date through September 2018, significantly affecting the country's stock market for foreign investors. Indeed, the growth of frontier-market economies from consumption and investment also has meant many have larger current account deficits as a percentage of GDP than their larger counterparts, which can contribute to increased currency risk (see figure 9).[12]

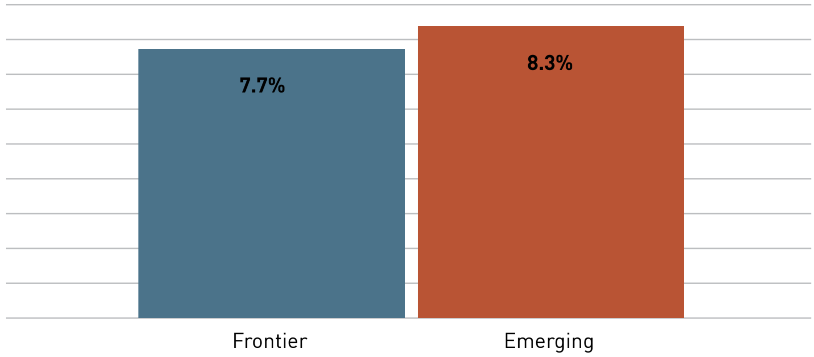
But currency risk in emerging markets also can be severe. For example, Turkey's lira has declined 37 percent year-to-date through September 2018 due to concerns about runaway inflation. Despite these extreme examples, on average, currencies in frontier markets have been less volatile than those of the emerging markets in the recent five-year period (see figure 10).[13] These figures are impacted by the fact that many frontier countries use the U.S. dollar or the euro as their currencies, or tightly manage to them, while only a handful of emerging-market countries have this advantage. And many of the currencies of both frontier- and emerging-market countries are heavily managed by their central banks, which can understate volatility until they are forced to devalue. This happened in frontiers Kazakhstan, Nigeria, and Zambia over this period but also occurred in emerging China and Egypt, as well as others.

These and other sources of risk can be quantified for emerging or developed markets using sophisticated risk models, but there is a dearth of risk models that specifically focus on frontier markets and the unique risk factors that affect them. However, from an investor's point of view, ultimately these risks are captured in the history of the volatility of the equity market returns, which provides a much simpler means of analysis. Examining the historical annualized standard deviations of the monthly returns of the frontier countries shows they are similar to emerging markets on a per country basis (see table 2). The aforementioned Argentina leads the pack with a standard deviation of 40 percent, and emerging-market Brazil is not far behind. On the other hand, Lithuania, a frontier country that is relatively developed, has the lowest volatility of this set, followed by Taiwan. On both a mean and median basis, the average frontier market exhibits slightly lower volatility than the average emerging market for this time period.

However, for investors who would invest in a portfolio of frontier markets rather than individual countries, it is the volatility of the overall portfolio that matters. In this case, frontiers have a distinct advantage over their emerging-market cousins. As noted above, correlations among the frontiers are lower than correlations among the

Figure 10

MEDIAN CURRENCY VOLATILITY



Source: Median within their respective group of annualized standard deviations of monthly spot currency returns from October 2013 to September 2018.

Table 2

VOLATILITY COMPARISON OF FRONTIER- AND EMERGING-MARKET COUNTRIES

Frontier		Emerging	
Argentina	40.2%	Brazil	33.5%
Bahrain	16.7%	Chile	19.3%
Bangladesh	18.2%	China	19.1%
Bulgaria	20.4%	Colombia	27.0%
Croatia	14.7%	Czech Republic	19.6%
Estonia	17.9%	Egypt	29.7%
Jordan	16.7%	Greece	15.5%
Kazakhstan	27.7%	Hungary	23.7%
Kenya	19.4%	India	17.7%
Kuwait	15.1%	Indonesia	20.8%
Lebanon	13.2%	Malaysia	15.3%
Lithuania	12.3%	Mexico	18.0%
Mauritius	14.2%	Pakistan	20.2%
Morocco	14.4%	Peru	20.2%
Nigeria	28.5%	Philippines	15.8%
Oman	13.3%	Poland	21.4%
Romania	20.1%	Qatar	22.4%
Serbia	18.5%	Russia	26.0%
Slovenia	18.1%	South Africa	21.0%
Sri Lanka	18.5%	Taiwan	12.8%
Tunisia	15.2%	Thailand	16.7%
Vietnam	19.4%	Turkey	27.9%
		UAE	26.0%
Summary Statistics			
Mean	18.8%	**Mean**	21.3%
Median	18.0%	**Median**	20.2%
Max	40.2%	**Max**	33.5%
Min	12.3%	**Min**	12.8%

Source: MSCI Frontier and Emerging Country indexes. Annualized standard deviation of monthly returns in USD of the MSCI Net Total Return country indexes from July 2013 through June 2018.

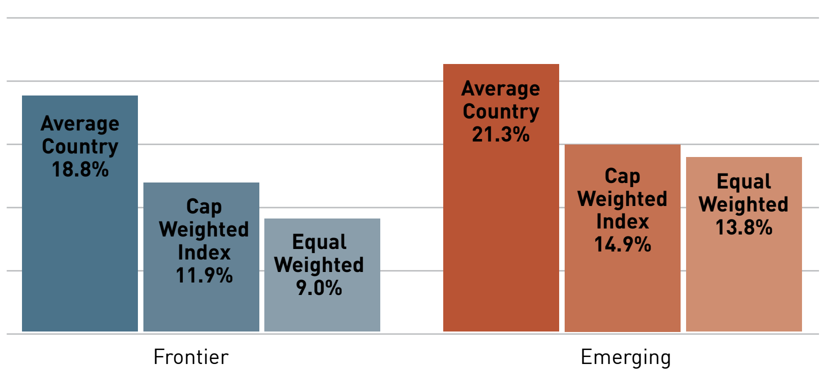
emerging markets. Thus, a portfolio of these assets, according to modern portfolio theory, should have lower portfolio-level risk than a portfolio of similarly volatile assets that have higher correlations.[14] An index can be viewed as a particular version of a portfolio, and in comparing indexes of frontiers and emerging markets two things become apparent: (1) index volatility is indeed lower than respective average country volatility for both frontiers and emerging, as would be expected, but (2) frontiers exhibit a greater reduction in volatility when combined in an index than emerging-market countries (see figure 11). In other words, due to their lower cross-correlations, frontiers gain a relatively larger benefit from diversification in lowering their overall portfolio volatility versus emerging markets.

Of course, an index with its capitalization-based weighting may not be a preferred version of portfolio implementation for some investors. For example, China alone represents about a third of the weight within each of the emerging-market MSCI, S&P Dow Jones, and FTSE indexes.[15] The frontier indexes from those providers have relatively less concentration, but the top two countries in each index represent more than 30 percent of their respective weight.[16] This type of concentration can be a source of volatility and risk that a more balanced approach can further reduce. One approach would be to simply equally weight those same countries within their respective indexes. Ignoring the implementation costs of rebalancing, equal-weighted versions of the frontier- and emerging-market indexes demonstrate the power of further diversification (see figure 11). In this example, the equal-weighted frontier-market volatility of 9 percent is actually below the S&P 500 volatility of 9.8 percent over the same period.

Beyond the opportunities and risks of frontier-market investing, one major disadvantage is its relative illiquidity. The average stock in the MSCI Emerging IMI Index traded 5.6 billion in total dollar volume over the year ending June 30, 2018, but the average stock in the MSCI Frontier IMI Index traded only $200 million over that same period. In other words, the average frontier stock has about one-twenty-eighth the liquidity of the average emerging-market stock based on those indexes.[17] When going beyond the constituents of the major frontier indexes, liquidity can be quite low, which can have implications for market-impact costs when trading. In addition, frontier markets have higher commissions and fees.

Figure 11

VOLATILITY: AVERAGE COUNTRY VS. INDEX VS. EQUAL WEIGHTED BY COUNTRY



Source: Annualized standard deviation of monthly returns in USD of the MSCI Net Total Return indexes from July 2013 through June 2018. Average Country Volatility using MSCI Frontier and Emerging Country Indexes. Cap Weighted Index are the MSCI Frontier Markets Index, MSCI Emerging Markets Index. Equal Weighted is constructed by equal weighting among the country indexes, rebalanced on a monthly basis.

As an extreme example, consider that selling a stock in Nigeria includes a 30-basis-point exchange fee, a 30-basis-point central depository and clearing fee, and a 7.5-basis-point stamp duty, plus commissions that can run from just under 50 basis points to more than 100 basis points depending on the broker. Given this low liquidity and the high trading costs, it comes as no surprise that such a small amount of ETF assets track this group.

The low liquidity of frontiers presents a challenge for large institutional investors who want to access the frontiers in sufficient size to make it worth their while to capture the benefits. But this challenge also bolsters the case for investing in the frontiers, because the lack of large institutional money in this asset class arguably means there are more inefficiencies that can be converted into excess returns than in other, more-crowded asset classes and sectors. Although the value of active management in frontier versus emerging markets is beyond the scope of this article, research shows that frontier markets have larger cross-sectional volatility than emerging or developed markets, an indicator of the opportunity to add value through active management.[18]

In considering investment in frontier markets, like all investment decisions, benefits have to be weighed against their costs. Frontier markets offer similar opportunities as emerging markets, often at relatively attractive valuations. Certainly, individual frontier countries can be exposed to unique risks on top of global ones. But their relative independence to each other can mean the volatility of their returns as a whole can be reduced within reasonably constructed portfolios. Perhaps more importantly, the frontier markets' relatively lower correlation to other equity asset classes can provide real diversification benefits. When added to an existing allocation of global equities, frontiers can potentially lower overall portfolio volatility and possibly enhance returns.

Cliff Quisenberry, CFA®, is chief executive officer and chief investment officer of Caravan Capital Management, LLC. He earned a BA in economics with distinction from Yale University. Contact him at cliffq@caravancap.com.

ENDNOTES

1. See https://www.ifc.org/wps/wcm/connect/corp_ext_content/ifc_external_corporate_site/about+ifc_new/ifc+history/establishing-emerging-markets.
2. Qatar and UAE were upgraded by MSCI in May 2014 and by S&P Dow Jones in September 2014. FTSE moved UAE from "Unclassified" directly to Secondary Emerging in September 2010 and upgraded Qatar from Frontier to Secondary Emerging in September 2016.
3. The Russell Frontier Index is not included because FTSE, which has acquired the Russell Global Equity Index Series, announced it will decommission that index effective December 2018. "RGI Migration Notice – March 2018 Migration timeline and expansion plan for FTSE Russell global indexes," https://www.ftse.com/products/index-notices/home/getnotice/?id=2588004.
4. "Covered" means that country is either a current member of an index provider's frontier, emerging market, or developed indexes or a standalone index.
5. See The World Factbook 2018. Washington, DC: Central Intelligence Agency, 2018. Continually Updated. https://www.cia.gov/library/publications/the-world-factbook/rankorder/2200rank.html#gh.
6. This includes the Eastern Caribbean Securities Exchange and West Africa's regional exchange, Bourse Régionale des Valeurs Mobilières, which operates out of Cote d'Ivoire and includes Benin, Burkina Faso, Guinea-Bissau, Mali, Niger, Senegal, and Togo.
7. Forecasted economic growth data is from the April 2018 IMF World Economic Outlook database of annual growth forecasts for 2019 to 2023, https://www.imf.org/external/pubs/ft/weo/2018/01/weodata/index.aspx.
8. Ibid. These 12 are: Guyana, Bhutan, Rwanda, Myanmar, Bangladesh, Laos, Cote d'Ivoire, Benin, Senegal, Mongolia, Cambodia, and Kenya.
9. Ibid. Brunei Darussalam is defined as a developed "high income" country by the International Monetary Fund but currently has no stock exchange.
10. Based on monthly Net Total returns in USD for the MSCI Frontier Markets Index, MSCI Emerging Markets Index, MSCI World ex-US Index, and Total return of the S&P 500 Index over those periods.
11. See BlackRock iShares MSCI Emerging Markets ETF (EEM) factsheet at https://www.ishares.com/us/literature/fact-sheet/eem-ishares-msci-emerging-markets-etf-fund-fact-sheet-en-us.pdf, iShares MSCI Frontier 1000 ETF (FM) factsheet at https://www.blackrock.com/investing/literature/fact-sheet/fm-ishares-msci-frontier-100-etf-fund-fact-sheet-en-us.pdf, Vanguard FTSE Emerging Markets Index (VWO) factsheet at https://institutional.vanguard.com/iippdf/pdfs/FS964R.pdf, and Invesco Frontier Markets ETF (FRN) information at https://www.invesco.com/portal/site/us/investors/etfs/product-detail?productId=-FRN&ticker=FRN&title=invesco-frontier-markets-etf.
12. Excludes frontier countries Jamaica, Palestine, and Trinidad and Tobago due to lack of forecast data.
13. The U.S. dollar is the official currency of frontier markets Ecuador and Panama. The frontier markets of Bahrain, Jordan, Kuwait, Lebanon, and Oman and the emerging markets of Qatar, Saudi Arabia, and UAE, are pegged or tightly managed to the U.S. dollar. The euro is the official currency of frontier markets Cyprus, Estonia, Latvia, Lithuania, Malta, Slovakia, Slovenia, and emerging market Greece. Frontier Burkina Faso, Cote d'Ivoire, and Senegal use the CFA franc, which is pegged to the euro.
14. This is Markowitz's famous equation of portfolio standard deviation. See Harry Markowitz, "Portfolio Selection," *Journal of Finance* 7, no. 1 (1952): 77–91.
15. From the July 31, 2018, factsheets: MSCI Emerging Markets Index, the S&P Emerging BMI, and the FTSE Emerging Index.
16. From the July 31, 2018, factsheets: MSCI Frontier Markets Index (Argentina and Korea total 38.83 percent in combined weight), the S&P Frontier BMI (Argentina and Korea total 32.30 percent in combined weight), and the FTSE Frontier Index (Argentina and Vietnam total 32.70 percent in combined weight).
17. Mean of the MSCI Aggregated Annual Traded Value for the constituents of the MSCI Frontier IMI and MSCI Emerging IMI indexes as of June 30, 2018.
18. See Mat Lystra, Ben Griffith, and Cliff Quisenberry, "Navigating the Frontier Equity Markets," Russell Investments white paper (April 2015), https://www.advisorselect.com/transcript/RussellInvestments/navigating-the-frontier-equity-markets.

CONTINUING EDUCATION

To take the CE quiz online,
www.investmentsandwealth.org/IWMquiz

5619 DTC Parkway, Suite 500
Greenwood Village, CO 80111
Phone: +1 303-770-3377
Fax: +1 303-770-1812
www.investmentsandwealth.org